

UNION SQUARE ACADEMY FOR HEALTH SCIENCES

Bernardo Ascona, Principal

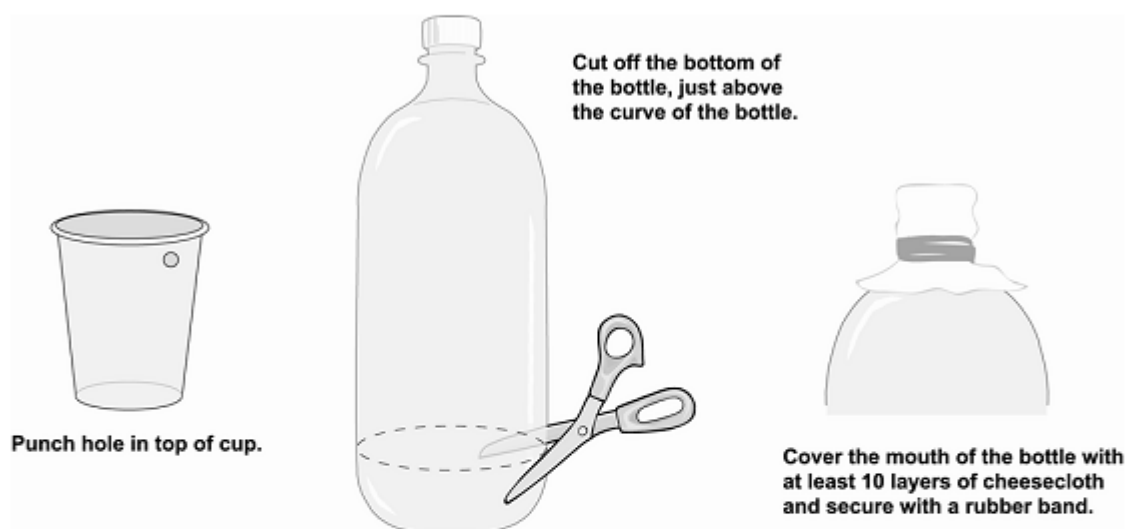
Jovany Cuevas and Shannon DeRosa, Assistant Principals

Ms. Donna Kam, Biology 7-12

Class: 9 th Grade Living Environment
Teachers: Ms. Kam (Periods 2, 3, 8); Ms. Figueroa (Periods 2, 3); Mr. Gomez (Period 8)
Driving Question (AIM): <ul style="list-style-type: none">What can I do to make clean water?
Anchor: <ul style="list-style-type: none">Get into groups and read the article on how astronauts recycled water in space. http://scitech.blogs.cnn.com/2009/05/22/astronauts-enjoy-recycled-urine/
Agenda (Cornell Notes, Activities/Artifacts, Projects, Summary): <ul style="list-style-type: none">Anchor (5 min) – Preread the article on water recycling in space.Small Group shareoutWhole Class Shareout – Tie with prior article study of Flint Water CrisisWater Filtration System Activity OverviewGroup Design of water filtration systemGo over design and build modelLesson Summary
NYS Standard(s): <ul style="list-style-type: none">LECC 6.1d The number of organisms any habitat can support (carrying capacity) is limited by the available energy, water, oxygen, and minerals, and by the ability of ecosystems to recycle the residue of dead organisms through the activities of bacteria and fungi.LECC 7.2a Human activities that degrade ecosystems result in a loss of diversity of the living and nonliving environment. For example, the influence of humans on other organisms occurs through land use and pollution. Land use decreases the space and resources available to other species, and pollution changes the chemical composition of air, soil, and water.
Next Generation Science Standard(s): <ul style="list-style-type: none">HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.* [Clarification Statement: Examples of human activities could include urbanization, building dams, and dissemination of invasive species. Examples of solutions could include simulations, product development, technological innovations, and/or legislation.]
Common Core Standard(s): <i>Reading Standards for Literacy in Science and Technical Subjects 6–12</i> <ul style="list-style-type: none">Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text (CCSS.ELA-LITERACY.RH.9-10.3).Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics (CCSS.ELA-LITERACY.RH.9-10.4).Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy) (CCSS.ELA-LITERACY.RH.9-10.5).Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words (CCSS.ELA-LITERACY.RH.9-10.7).
Learning Intention (IWBAT): <ul style="list-style-type: none">I will be able to design a water filtration system to filter clean water.
Context (What are students doing? Why are they doing it? Essential or pivotal questions, Mini-Lesson): <ul style="list-style-type: none">Anchor (5 min) – Preread the article on water recycling in space.Small Group shareout – http://scitech.blogs.cnn.com/2009/05/22/astronauts-enjoy-recycled-urine/Whole Class Shareout – Tie with prior article study of Flint Water CrisisWater Filtration System Activity Overview

Pre-lesson Instructions

- Students should work in groups of 3 or 4.
- Write the names of the 7 different filtering materials on 7 individual small slips of paper and place them in a hat or basket. In addition, write "free choice" on several small slips of paper. Add enough "free choice" slips for each group to choose a total of 3 filtering materials.
- Gather materials for this activity. Each filtration material needs to fill the water filtering system to a depth of 5–8 cm. There should be enough of each filtration material for several groups to use. Make sure to have extra material for students to choose their "free choice" options.
- Wad-up enough coffee filters for multiple groups to use as a filtration layer.
- Rinse the activated charcoal granules in advance to remove the dust.
 - Put the granules in a mesh bag (panty hoses work well) and rinse with tap water.
- Construct the water filtering system structure: (one per group)
 - Punch a hole in the top of each cup, just below the rim to avoid a vacuum.
 - Remove the labels on the 2-liter bottles and then cut off the bottom of the bottle, just above the curve of the bottle.
 - Construct the structure of the water filtering system by covering the mouth of the bottle with at least 10 layers of cheesecloth and secure with a rubber band. See diagram:



- Make "gray water":
 - Test your tap water before making the gray water solution. You want to start this solution with "clean water". Your clean water should have a pH between 6.5 and 7.5. If your tap water is not between pH 6.5 and 7.5, then use store-bought drinking water.
 - Mix 1 part Italian salad dressing (vinegar and oil with seasonings, shaken) to 5 parts water in a large, clean container.
 - Make enough gray water for each group to have about 500 ml.
 - Note the pH of the gray water, it should be around 4. If needed, you can add vinegar to the gray water to drop the pH.
 - Reserve enough clean water (either tap water or store-bought drinking water with a pH between 6.5 and 7.5) so that each student group has about 500 ml.
 - At least one day before conducting this experiment:
 - Discuss "purifying and filtering materials" with the class. Encourage students to bring in other materials to add to the list of materials supplied. These will be "free choice" items.
 - Review pH, acid, base and neutral with your students and show them how to pH test using litmus paper. Review the pH color chart.
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- Group Design of water filtration system
 - Go over design and build model
 - Lesson Summary – Reflection

Reflect on the Flint Water Crisis in Michigan and how advance countries like America should be concerned about our water supply.

Construction and Effectiveness of the Water Filtration System Rubric

CATEGORY	4	3	2	1
Plan	Plan is very neat with clear labelling and all group members agreed on materials needed.	Plan is neat with clear labelling and most members agreed on materials needed.	Model is not clear. Only some of the members agreed on materials needed.	Plan is inadequately labeled and members of the group are not in consensus.
Construction – Water Filter System Effectiveness	Great care was taken in construction process so that water filtered had minimal dirt. (Water is clear to light gray)	Construction was careful and mostly accurate, however, 1-2 details could have been refined and the water filtered had moderate amount of dirt. (Water is gray.)	Construction accurately followed the plans, however, 3-4 details could have been refined and the water filtered had moderate to severe amount of dirt. (Water is gray to dark gray.)	Construction appears careless or haphazard. Many details need refinement for a strong water filtration system. Water filtered still has a severe amount of dirt. (Water is dark gray to black.)
Scientific Knowledge	Explanations and descriptions by the student indicate a clear and highly accurate understanding of scientific principles.	Explanations and descriptions by the student indicate a moderate understanding of scientific principles.	Explanations and descriptions by the student indicate a basic understanding of scientific principles.	Explanations and descriptions by the student illustrate a limited understanding of scientific principles.

Hinge Point/Summary Questions:

- Why should we start looking for innovative ideas in developing water filtration systems?
- Name and explain how water is used in a biological ecosystem and in your body system.

Multiple Entry Points:

- Students working in small groups.
- Students join in entire class share-out.

Checks for Understanding (Throughout the Lesson):

- Justify the materials you are planning on using to build your water filtration system.
- Reflect on the Flint Water Crisis in Michigan and how advance countries like America should be concerned about our water supply.

Differentiations (Differentiating content, process, or product; Using data to create flexible groups; Modifying based on IEPs):

- Reading instructions aloud
- Writing verbal notes on the board
- Giving ELLs and SpEds additional attention, walking to their groups during activities.
- Vocabulary translations in Spanish for ENLs in the class.
- Individualized assistance will be provided to all students.
- Students will work in heterogeneous groups for group work.

New Tentative Seating Chart – P2

EXIT
DOOR

		Jhoan	Jasmin S.				
	Christine						Sergio
	Kelly						
	Anthony	Daniela	Nadia		Raven	Antony	Leslie
	Joemi						Daylan
	Raya						Jasmin P.
		Alina	Aleksandra				
	Roy				Brian	Amy	Johnattan
	Kyana						Wenfei
	Nicole						
ENTRANCE DOOR	Elizabeth	Dana	Tenzing	Teachers	Joel	Jeramie	Elhadji

New Tentative Seating Chart – P3

EXIT
DOOR

	Jade						
		Tamids	Cherisse				
	Shelena						
	Miguel	Alvaro					Samuel
	Deysi				Emely		Omar
	Gisel						Madeline
		Sherlyn	Myriam				
					Damien	Savannah	Natalia
	Taznin						
	Melany						
ENTRANCE DOOR	Acalli	Tiffany	Salahaddin	Teachers	Shakira	Zhaniah	Justin A

New Tentative Seating Chart – P8

EXIT
DOOR

		Janina					
		Jordan	Maria C				Amber
					Britney		
	Napash						Ariya
		Abigail	Manuel				
	Lorennny				Vanessa	Daniela	Karina
	Melani						Sunjedia
	Lesly						Pablo
ENTRANCE DOOR	Tajaire	Kale	Scarlet	Teachers	Ashley	Chelsea	Maria M

Living Environment 2nd Period	
Nicole Blas (M)	Nicole will receive visual aids, as well as spoken information to support her with reading comprehension in living environment. Nicole, will also receive 1:1 instruction when necessary as well as repetition of previously taught concepts, when needed.
Dana Bowen (S)	Dana will be seated right in the front of the room to minimize any distractions. She will be given a pre-writing graphing organizer for writing assignments in living environment. When necessary she will receive 1:1 instruction and/or small group instruction.
Kelly Cabrera (M)	Kelly will be seated near the smart board as she has vision difficulties. She will receive small group instruction when needed. Teachers will do check-ins to make sure fully understanding of the material being taught.
Elhadji Diop (M)	Elhadji will receive 1:1 support when clarification is required. He will also receive pre-writing graphic organizers to support his writing skills. Teachers will do check-ins to ensure his understanding of the content being taught.
Brian Gallo Bermeo (S)	Brian will receive visual aids to support him with understanding of major points of the lesson. Repetition and check-ins will increase during the mini-lesson to ensure Brian's understanding of the main ideas. Multi-step assignments will be broken down into segments, as well as a step by step list will be provided
Johnattan Garcia (S)	Johnattan will receive 1:1 support and clarification on in class assignments. Johnattan will be paired with a partner that will support him with reading comprehension, as well as refocusing. Teachers will ask direct questions to check for understanding of main ideas. Rubrics of assignments will be provided in advance, so that Johnattan understands what is expected of him. Positive reinforcement will be provided on a regular basis.

Roy Harris Jr. (S)	Roy Benefits from utilizing graphic organizers to aid him with multi-step assignments. Roy will be redirected when being off task.
Jhoan Hurtado (S)	Jhoan will receive color-coded material to aid him with reading comprehension. Teachers will do constant check-ins to make sure Jhoan is following along with the lesson and/or activities. Reading assignments will be provided in chunks to ensure reading comprehension of main ideas/main material.
Sergio Kuilan (S)	Sergio will receive small group instruction when needed. Sergio will receive visual aids when new material is introduced. He will also receive simplified directions and step-by-step checklist on lengthy assignments.
Daylan Lopez (M)	Daylan will receive pre-writing graphic organizers, and checklists on lengthy assignments. When word problems are involved, Dylan will receive an annotation guide to help extract the important information on a word problem.
Raya Mack (M)	New information will be presented utilizing a multisensory approach and accompanied by visual models and concrete manipulative materials. Raya will be provided with repetition and clarification of instructions as well as frequent review of new concepts. Raya will be provided with graphic organizers and tools to assist her in breaking down tasks into smaller components. Important information will be restated, paraphrased and emphasized to ensure Raya's auditory comprehension of material. Re-questioning Raya would ascertain if she understands the instructions and/or material.
Jasmine Palma (H)	Jasmine will be provided with one-on-one instruction and/or small group instruction when required. Jasmine can become overwhelmed when being in large group setting. Jasmine will receive a graphic organizer for lengthy assignments to support her with the assignment.
Jasmin Sosa Tepale (S)	Jasmin will receive extensive modeling of an activity. Constant check for understating throughout the lesson will be provided (verbal, written, and/or physical signal) Small group instruction will be provided when required, as well as one-on-one instruction.

Christine Vargas Cabrera (M)	Christine will receive graphic organizers, vocabulary banks, and sentence starters. Christine will be provided with post-its and highlighter to underline important information when reading complex texts in Living Environment. Christine will receive checklists and calendars for long-term projects and assignments.
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Living Environment 8th Period	
Amber Abud (S)	Amber will receive small group instruction and constant check-ins from her teachers. Amber will be provided with short and concise directions. Amber will also be provided with checklists to ensure completion of assignments.
Manuel Alvarez (S)	Manuel will be provided with checklists to ensure he is following the material. Strategies such as turn and talk will be implemented as much as possible, as Manuel benefits from sharing his ideas with peers. Manuel will also be provided with small group instruction when required.
Britney Disalvo (S)	Britney will be provided with graphic organizers to support her writing and high interest reading materials whenever necessary. Lengthy tasks will be broken down into smaller components to ensure Britney's understanding of the material being presented.
Napash Jones (S)	Napash will be provided with extensive modeling of new material, as well as repetition. Napash will also be provided with sentence starters when essay writing and/or short responses are involved.
Maria Martinez (S)	Maria will receive one-on-one support when required. Positive reinforcement will be provided. Passages and questions will be read aloud to her.
Ashley Medina (S)	Ashley will receive graphic organizers to visually organize information and to assist with writing tasks. Ashley will also receive on-task prompts to help her minimize any distractors.
Rosario Reinoso, Lorennny (ENL/S)	Student is English as a New Language learner. Will be seated and working with a student that speaks Spanish and can help with interpretation. Spanish dictionary will be provided during exams and as needed.

Camacho, Maria (ENL/M)	Student is English as a New Language learner. Will be seated and working with a student that speaks Spanish and can help with interpretation. Spanish dictionary will be provided during exams and as needed.
Hernandez Andrade, Scarlet (ENL/M)	Student is English as a New Language learner. Will be seated and working with a student that speaks Spanish and can help with interpretation. Spanish dictionary will be provided during exams and as needed.

Key:

S = Struggling Level

M = Medium Level

H = High Level

ENL = English as a New Language

Differentiation - Students will be receiving lab handout with hints next to the analysis questions based on Lexile scores from Read180 with Ms. Leung.



Reading Performance Report

TEACHER: DOROTHY LEUNG

School: Union Square Academy for Health & Sciences
Grade: 9, 10, 11, 12



Time Period: 09/01/17 – 06/29/18

STUDENT	GRADE	LEXILE®	TEST DATE	PERFORMANCE STANDARD	NORMATIVE DATA		
					PERCENTILE RANK	NCE	STANINE
Abud, Amber	9	BR (0)	12/15/17	Below Basic	1	1	1
Barrera, Alvaro	9	737	12/21/17	Basic	10	23	2
Camacho, Maria	9	273	12/15/17	Below Basic	1	1	1
chaulagain, chandraka	11	909	12/18/17	Basic	20	32	3
Diop, Elhadji	9	126	12/19/17	Below Basic	1	1	1
Elmahdy, Omar	10	646	12/15/17	Below Basic	2	7	1
Gallo Bermeo, Brian	9	816	12/19/17	Basic	18	31	3
Gonzalez, Joel	10	BR (0)	10/12/17	Below Basic	1	1	1
hasan, nouroz	10	727	12/15/17	Basic	5	15	2
Hernandez Andra, Scarlet	9	BR (0)	12/18/17	Below Basic	1	1	1
ni, arkan	10	145	12/18/17	Below Basic	1	1	1
Ojeda, Brandon	10	815	12/15/17	Basic	13	26	3
Ortega Vargas, Jacqueline	10	806	12/15/17	Basic	12	25	3
Ortiz, Xiomara	11	917	09/28/17	Basic	21	33	3
Petersen, Devon	11	751	12/15/17	Below Basic	5	15	2
Rosario Reinoso, Lorenn	9	BR (0)	12/18/17	Below Basic	1	1	1
Ruiz, Britney	10	829	09/29/17	Basic	15	28	3
sanchez, adrian	10	899	12/18/17	Basic	21	33	3
santiago, juan	11	848	09/28/17	Basic	14	27	3
Santos, Kleber	11	772	01/30/18	Below Basic	7	19	2
Shi, Huan Sang	12	595	12/19/17	Below Basic	1	1	1
Sosa Tepale, Jasmin	9	226	12/18/17	Below Basic	1	1	1
Tejada, Miguel	9	940	12/21/17	Basic	32	40	4

BR = Beginning Reader

YEAR-END PROFICIENCY LEXILE® RANGES

GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8	GRADE 9	GRADE 10	GRADE 11	GRADE 12
100-400	300-600	500-800	600-900	700-1000	800-1050	850-1100	900-1150	1000-1200	1025-1250	1050-1300	1050-1300

Using This Report

Purpose: This report shows students' performance standards based on the results of their latest SRI tests.

Follow-Up: Use the information on the report to set goals for students, and to identify students who are performing at low performance standards.

Co-teaching Model:

- **Team Teaching Model**

Materials:

- safety glasses
- 2-liter bottles
- cheesecloth
- rubber bands
- pH testing strips (litmus paper)
- metric rulers
- plastic cups
- paper plates
- metric liquid measuring cups
- mesh bag (panty hose)
- tap water or bottled water
- Italian dressing (to make gray water)
- aquarium gravel
- play sand
- activated carbon/activated charcoal
- marbles
- cotton balls
- coffee filters
- packing materials (Styrofoam “popcorn”)

Assessment (How will you know what the students have learned? Exit slips, learning logs):

- Randomly choosing students to answer discussion questions throughout the lesson and having students choose their peers so we listen to different types of answers.
- Regents Practice Questions for the anchor, activity, and lesson summary
- Lesson Summary - Ask the class to explain their activity, review conclusion questions.
- Both teachers will be going around the room providing over the shoulder support and making sure students are on task and working with their partners answering questions.
- Assessment Checklist will be used to monitor progress throughout the period.

Scientific Investigation Rubric**Experiment:** CLEANING WATER

Student Name _____

Date _____

Performance Indicator	0	1	2	3	4
The student developed a clear and complete hypothesis.					
The student followed all lab safety rules and directions.					
The student followed the scientific method.					
The student recorded all data on the data sheet and drew a conclusion based on the data.					
The student asked engaging questions related to the study.					
The student described at least one recommendation for NASA in the area of water recycling and water filtration.					
Point Total					

Point total from above: _____ / (24 possible)

Grade for this investigation _____

Grading Scale:

A = 22 - 24 points

B = 19 - 21 points

C = 16 - 18 points

D = 13 - 15 points

F = 0 - 12 points

Assessment Checkers

Period 2				Period 3				Period 8			
Student	Anchor	Discussion: Shareout	Activity	Student	Anchor	Discussion: Shareout	Activity	Student	Anchor	Discussion: Shareout	Activity
Anchor				Anchor				Anchor			
1 Blar Nicale				1 Acosta Jade				1 Abud Amber			
2 Bauon Dana				2 Albishari Omar				2 Ali Ali			
3 Cabrera Kelly				3 Alvarez Cherisse				3 Alvarez Manuel			
4 Carrera Anthony				4 Avila Justin				4 Chaudhury Sunjedia			
5 Diap Elhadji				5 Barrera Alvaro				5 Clavall Janina			
6 Daughtry Raven				6 Bashir Tazmin				6 Cramer Tajaira			
7 Galla Berman Brian				7 Colon Madeline				7 Craggs Vanessa			
8 Vazquez Alina				8 Daylam Salahaddin				8 Diralva Britney			
9 Yanqam Tenzing				9 Pickett Shelena				Discussion Shareout			
Discussion Shareout				Discussion Shareout				1 Hernandez Lerly			
1 Allen Nadia				1 De Los Santos Deysi				2 Jean Abigail			
2 Aparicio Jeremie				2 Facey Samuel				3 Jimenez Jordin			
3 Harris Jr Ray				3 Frisz Tiffany				4 Jones Naphar			
4 Hurtado Jhaan				4 Grullon Melany				5 Martinez Karina			
5 Juarez Anthony				5 Leon Calle Sherlyn				6 Ramirez Reinara Lareny			
6 Kulan Sergio				6 Leslie Zhanish				7 Rukajirabella			
7 Garcia Jahnattan				7 Sanchez Emily				8 Zhicay Melani			
8 Perez Almaza Daniela				8 Tejeda Miguel				Activity			
Activity				Activity				1 Orpina Vanessa			
1 Gonzalez Joel				1 Lordthao Tamida				2 Palameque Adam			
2 Palma Jarmino				2 Narsingh Shakira				3 Pinkney Paris			
3 Parachas Lerlie				3 Papslotzicortez Gisel				4 Plaza Daniela			
4 Perez Jaemi				4 Richard Natalia				5 Ramaz Kale			
5 Sarzyrka Alekandra				5 Sanchez Adrian				6 Rauf Ariya			
6 Singleton Kalvin				Exit Slip				Exit Slip			
Exit Slip				1 Rivera Myriam				1 Martinez Maria			
1 Lin Amy				2 Robinson Savannah				2 Medina Ashley			
2 Lin Wenfei				3 Saldana Acalli				3 Melendez Chelrea			
3 Lopez Daylan								4 Montgomery Jordan			
4 Lara Kyana								5 Navarra Pablo			
5 Mack Raya											
6 Sara Topale Jarmin											
7 Suarez Ethan											
8 Vargas Cabrera Christine											
9 Pluma Elizabeth											

Extension Activity/HW (What will happen in subsequent lessons?):

Intradisciplinary, students can apply these scientific investigation skills to other labs in Living Environment and on the Regents exam.

Interdisciplinarily, students can apply these skills to ELA class as they utilize evidence and infographics to support claims and predictions.

Astronauts enjoy recycled urine

Posted: 09:02 AM ET

The crew of the [International Space Station \(ISS\)](#) **tasted their own urine** Wednesday - and NASA didn't even have to double-dog dare them.

Astronauts celebrated by "clinking" their drinking bags together in a traditional cheers before sipping water composed of recycled urine, sweat and atmospheric moisture. The cheers marked the initiation of a closed loop water recycling system aboard the ISS.

NASA claims each crew member creates about a gallon of water from urine every six hours, but the source water doesn't just come from the space station's human occupants. "Lab animals on the ISS breathe and urinate, too, and we plan to reclaim their waste products along with the crew's. A full complement of 72 rats would equal about one human in terms of water reclamation," Layne Carter, a water-processing specialist with NASA, said in a statement released by the space agency.



On [NASA TV](#), Flight Engineer Mike Barrett confirmed "the taste is great," as another astronaut swam through the air catching floating bubbles of the recycled water. "This has been the stuff of science fiction," Barrett said on the program. "Everybody's talked about recycling water in a closed loop system, but nobody's ever done it before. Here we are today with the first round of recycled water."

Tom's Hardware is less enthusiastic about drinking the potent potable:

While it might sound completely gross to us, the water is probably cleaner than what we drink on earth. That being said, I'd rather take my chances with Earth water than drink the purified urine of a rat. Really.

Similar water purification technology was employed after the Asian tsunami in 2004, but with large scale use there is typically a much larger gap between urine and tap.

Would you be willing to drink reclaimed urine, or are you sticking to bottled water while Evian is available?

Posted by: [Wes Finley-Price](#) -- [CNN.com Webmaster](#)

Flint Water Crisis Article Study from Previous Lesson

Name: _____ Date: _____ Period: _____
Living Environment

Reflection Piece: 1 page hand-written

Explain the basic information that is being presented in terms of the 5W's: Who? What? When? Where? Why?



Morning Mix

In Flint, Mich., there's so much lead in children's blood that a state of emergency is declared

By **Yanan Wang** December 15, 2015

*This post has been updated.**

For months, worried parents in Flint, Mich., arrived at their pediatricians' offices in droves. Holding a toddler by the hand or an infant in their arms, they all have the same question: Are their children being poisoned?

To find out, all it takes is a prick of the finger, a small letting of blood. If tests come back positive, the potentially severe consequences are far more difficult to discern.

That's how lead works. It leaves its mark quietly, with a virtually invisible trail. But years later, when a child shows signs of a learning disability or behavioral issues, lead's prior presence in the bloodstream suddenly becomes inescapable.

According to the World Health Organization, "lead affects children's brain development resulting in reduced intelligence quotient (IQ), behavioral changes such as shortening of attention span and increased antisocial behavior, and reduced educational attainment. Lead exposure also causes anemia, hypertension, renal impairment, immunotoxicity and toxicity to the reproductive organs. The neurological and behavioral effects of lead are believed to be irreversible."

The Hurley Medical Center, in Flint, released a study in September that confirmed what many Flint parents had feared for over a year: The proportion of infants and children with above-average levels of lead in their blood has nearly doubled since the city switched from the Detroit water system to using the Flint River as its water source, in 2014.

The crisis reached a nadir Monday night, when Flint Mayor Karen Weaver declared a state of emergency.

“The City of Flint has experienced a Manmade disaster,” Weaver said in a declaratory statement.

The mayor — elected after her predecessor, Dayne Walling, experienced fallout from his administration’s handling of the water problems — said in the statement that she was seeking support from the federal government to deal with the “irreversible” effects of lead exposure on the city’s children. Weaver thinks that these health consequences will lead to a greater need for special education and mental health services, as well as developments in the juvenile justice system.

“Do we meet the criteria [for a disaster area]? I don’t know,” she told Michigan Live. But Weaver doesn’t think the city can receive the help it needs without alerting federal officials to the urgency of the matter.

To those living in Flint, the announcement may feel as if it has been a long time coming.

Almost immediately after the city started drawing from the Flint River in April 2014, residents began complaining about the water, which they said was cloudy in appearance and emitted a foul odor.

Since then, complications from the water coming from the Flint River have only piled up. Although city and state officials initially denied that the water was unsafe, the state issued a notice informing Flint residents that their water contained unlawful levels of trihalomethanes, a chlorine byproduct linked to cancer and other diseases.

Protesters marched to City Hall in the fierce Michigan cold, calling for officials to reconnect Flint’s water to the Detroit system. The use of the Flint River was supposed to be temporary, set to end in 2016 after a pipeline to Lake Huron’s Karegnondi Water Authority is finished.

A petition lobbying for the ending the city’s Flint River water supply garnered 26,000 signatures.

Through continued demonstrations by Flint residents and mounting scientific evidence of the water's toxins, city and state officials offered various solutions — from asking residents to boil their water to providing them with water filters — in an attempt to work around the need to reconnect to the Detroit system.

That call was finally made by Snyder (R) on Oct. 8. He announced that he had a plan for coming up with the \$12 million to switch Flint back to the Detroit system. On Oct. 16, water started flowing again from Detroit to Flint.

David Murray, press secretary for Michigan governor Rick Snyder's office, told The Washington Post that the state has been working on improving the water quality in Flint and other cities for the past year. It has also offered more than \$10 million in financial assistance to pay for a temporary switch into the Detroit system while the connection to Lake Huron is being prepared.

"Flint residents need to have access to safe, clean water," Murray wrote in an email to The Post. "Gov. Snyder and the administration have been working closely with the city to focus on health issues affecting children and other city residents, and address water infrastructure challenges."

He added that while the water leaving Flint's drinking water system is safe to drink, "some families with lead plumbing in their homes or service connections could experience higher levels of lead in the water that comes out of their faucets." An action plan created by Snyder in October includes free water testing, free water filters and the accelerating of corrosion controls in the drinking water system, according to Murray.

For the parents of children who may have been affected, such actions were accompanied by the sense that they had come too late.

These parents and other Flint residents filed a class-action federal lawsuit against Snyder, the state, the city and 13 other public officials in November for the damages they have suffered as a result of the lead-tainted water. The suit, which claims to represent "tens of thousands of residents," alleges that the city and state officials "deliberately deprived" them of their 14th Amendment rights by replacing formerly safe drinking water with a cheaper alternative that was known to be highly toxic.

"For more than 18 months, state and local government officials ignored irrefutable evidence that the water pumped from the Flint River exposed [residents] to extreme toxicity," the complaint reads. "The deliberately false denials about the safety of the Flint River water was as deadly as it was arrogant."

Calling officials' conduct "so egregious and so outrageous that it shocks the conscience," the complaint cites the specific experiences of a few plaintiffs and their families, all of whom allege they have been challenged by similar health ailments since high levels of lead and copper entered their bloodstreams.

These conditions include skin lesions, hair loss, chemical-induced hypertension, vision loss and depression. Of the four families described in the complaint, two had ceased to drink Flint water after a certain point — and used it only for washing and cooking — but still said they were exposed to many of the same ill effects.

Snyder's press secretary, Murray, wrote in an email to The Post that the administration disagrees with points in the suit, but declined to discuss details of pending litigation.

As the [Detroit Free Press](#) reported in October, avoiding Flint water became a way of life for the city's residents.

Those who could afford it opted for bottled water, buying it by the gallons. Those who couldn't spare the money drank it straight from the tap all the same, knowing that they would be paying for it later. When it came to bathing, some slowly filled bathtubs with pots of boiled water for their children.

(The city issued a boil advisory in [September 2014](#). This recommendation runs contrary to the [Center for Disease Control and Prevention's guidelines](#) on lead in drinking water, which state that heating or boiling water will not remove lead. In fact, "because some of the water evaporates during the boiling process, the lead concentration of the water can actually increase slightly as the water is boiled," according to the CDC.)

LeeAnn Walters, a Flint resident and mother of 4-year-old twins, took every precaution after blood tests revealed that the level of lead in one of her sons had soared after the switch to Flint River.

"I was hysterical," Walters told the Free Press. "I cried when they gave me my first lead report."

She had feared lead was the problem when her whole family developed rashes and her son stopped gaining weight.

Now, Walters said, when her children experience problems as they grow up, she will always wonder whether things would have been different — if their lives would have been better — if it weren't for the water.

**This post has been updated with a response from the office of Gov. Rick Snyder.*

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